Supplemental Examiner's Amendment

In addition to Examiner's Amendment filed on 12/17/2009, the following supplemental Examiner's Amendment is given to confirm that claims 40 and 41 are cancelled.

The authorization for Examiner's amendment to cancel claims 40 and 41 was given by Mr. Paul Fleischut in a telephone interview on December 8, 2009.

40. - 41. (Canceled)

In addition, the following claims have been amended as follows:

Amendments are shown relative to the claims of Amendment B:

1. (Currently Amended) A polyelectrolyte film comprising **a multilayer comprising** an interpenetrating network of a net positively charged polyelectrolyte polymer comprising repeat units with at least two fluorine atoms ~~,~~ **and** a net negatively charged polyelectrolyte polymer comprising repeat units with at least two fluorine atoms, and

further comprising a perfluorinated counterion within ~~the bulk~~ **the multilayer** ~~of the interpenetrating network of the net positively charged polyelectrolyte polymer and the net negatively charged polyelectrolyte polymer~~ ,

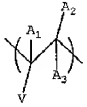
wherein the ~~fluorinated~~ **perfluorinated** counterion ~~comprising~~ **comprises a fluorinated alkanesulfonic acid, a fluorinated alkanecarboxylic acid, or both; an alkane component of the acid having a molecular weight up to 300 g per mole; and** at least ~~two~~ **four** fluorine atoms.

2. (Original) The polyelectrolyte film of claim 1 wherein the net positively charged polymer and the net negatively charged polymer are independently selected from the group consisting of polyolefins, polyamines, polyamides, polyethers, polyesters, polyimides, polysulfones, polyaryls, polyphenols, polyaramides, and copolymers thereof.

3. (Original) The polyelectrolyte film of claim 1 wherein the net positively charged polymer and the net negatively charged polymer are polyolefins having vinyl groups.

4. (Original) The polyelectrolyte film of claim 3 wherein the vinyl group is an allyl group.

5. (Previously Presented) The polyelectrolyte film of claim 2 wherein the repeat unit has the structure:



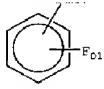
wherein A_1, A_2, and A_3 are each independently $-(CH_2)_mH$ or $-(CH_xF_{2-x})_nF$; m and n are independently 0 to 12; x is 0, 1, or 2; and each V is independently selected from the group consisting of:

fluorinated hydrocarbons having the formula:
$-(CH_2)_p(CF_2)_qF$; $-(CH_2)_p(CF_2)_qCOOH$; $-(CH_2)_p(CF_2)_qOPO_3^-$;
$-(CH_2)_p(CF_2)_qSO_3^-$; $-(CH_2)_p(CF_2)_qOSO_3^-$; $-O(CH_2)_p-(CF_2)_q-F$; or
$-O(CH_2)_p(CF_2)_q-SO_3^-$;

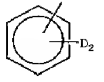
fluorinated amides having the formulae $-CONB_1$ wherein B_1 is
$-(CH_2)_p(CF_2)_qF$; $-(CH_2)_p(CF_2)_qCOOH$; $-(CH_2)_p(CF_2)_qOPO_3^-$;
$-(CH_2)_p(CF_2)_qSO_3^-$; or $-(CH_2)_p(CF_2)_qOSO_3^-$;

fluorinated esters having the formulae $-COOC_1$ wherein C_1 is
$-(CH_2)_p(CF_2)_qF$; $-(CH_2)_p(CF_2)_qCOOH$; $-(CH_2)_p(CF_2)_qOPO_3^-$;
$-(CH_2)_p(CF_2)_qSO_3^-$; or $-(CH_2)_p(CF_2)_qOSO_3^-$;

fluorinated phenyl groups having the formulae:

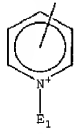


wherein Di is 2 to 5; or



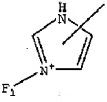
wherein D_2 is $-(CH_2)_p(CF_2)_qF$ or $-O(CH_2)_p(CF_2)_qF$;

fluorinated pyridiniums having the formulae:



wherein E_1 is $-(CH_2)_p(CF_2)_qF$;

fluorinated imidazoliums having the formulae:



wherein F_1 is $-(CH_2)_p(CF_2)_qF$;

fluorinated quaternary nitrogens having the formulae $-N^+G_1G_2G_3$ where G_1, G_2, and G_3 are each independently $-(CH_2)_p(CF_2)_qF$ or $-arylF_z$ wherein z is 2 to 8;

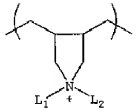
fluorinated sulfoniums having the formulae $-S^+H_1H_2$ where H_1 and H_2 are independently $-(CH_2)_p(CF_2)_qF$; Or $-arylF_z$ where z is 2 to 8; and

fluorinated phosphoniums having the formulae $-P^+J_1J_2J_3$ where J_1, J_2, and J_3 are independently: $-(CH_2)_p(CF_2)_qF$; or $-arylF_z$ where z is 2 to 8;

p is 0 to 6 and

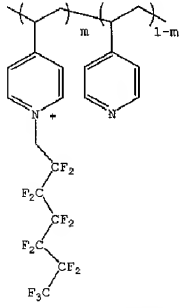
q is 1 to 21.

6. (Original) The polyelectrolyte film of claim 2 wherein the polymer repeat unit comprises an allyl group having the structure:



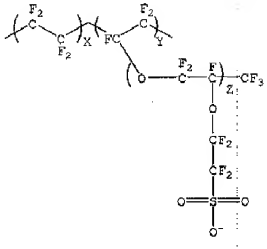
wherein L_1 and L_2 are $-(CH_2)_p(CF_2)_qF$, p and q are independently selected for L_1 and L_2, and p is 0 to 6 and q is 1 to 21.

7. (Original) The polyelectrolyte film of claim 1 wherein the net positively charged polymer has the structure:



wherein m is a mole fraction from about 0.1 to about 1.0.

8. (Original) The polyelectrolyte film of claim 1 wherein the net negatively charged polymer has the structure:



wherein X is from about 6 to about 10, Y is about 1, and Z is from about 1 to about 3.

9. (Original) The polyelectrolyte film of claim 1 further comprising particles having a size in the range of about 1 nanometer to about 10 micrometers.

10. (Original) The polyelectrolyte film of claim 9 wherein the particles are selected from the group consisting of silicon dioxide, aluminum oxide, titanium dioxide, iron oxide, ~~zirconium~~ oxide, vanadium oxide, clay minerals, carbon fibers, carbon nanotubes, and charged fluorinated particles.

11. (Original) The polyelectrolyte film of claim 10 wherein the particle is the clay mineral, and the clay mineral comprises attapulgite clay.

12. (Currently Amended) A film comprising multilayers of a charged polyelectrolyte polymer comprising repeat units with at least two fluorine atoms ~~and~~ electrostatically complexed with a perfluorinated charged particle comprising repeat units

with at least two fluorine atoms, wherein the charge of the polyelectrolyte polymer is opposite that of the charge of the perfluorinated charged particle ; wherein the multilayers comprise layer pairs and each layer pair comprises the polyelectrolyte polymer electrostatically complexed with the perfluorinated charged particle, and the multilayers are created from the polyelectrolyte polymer and an aqueous dispersion or suspension of the fluorinated polymer particles .

13. (Previously Presented) The film of claim 12 wherein the perfluorinated charged particle comprises polytetrafluoroethylene.

14. - 27. (Canceled)

28. (Currently amended) The polyelectrolyte film ~~A thin film~~ of claim 1 ~~used for the purpose of~~ wherein the film is adapted for reducing friction at a surface.

29. (Previously Presented) The polyelectrolyte film of claim 28 wherein said surface is selected from the group consisting of metals, plastic, semiconductor, and metal oxide.

30. (Previously Presented) The polyelectrolyte film of claim 1 in contact with and on a surface of a rotating disc magnetic storage medium ("fixed disc").

31. (Previously Presented) The polyelectrolyte film of claim 1 in contact with and on a surface of a rotating disc magnetic storage medium ("fixed disc") wherein the polyelectrolyte film further comprises a surface layer

comprising a fluorinated small molecule or a fluorinated oligomer.

32. (Previously Presented) The polyelectrolyte film of claim 1 formed between two contacting, moving metal surfaces.

33. (Previously Presented) The polyelectrolyte film of claim 1 formed between two contacting, moving metal surfaces, said polyelectrolyte film formed by the addition of particles of complexed fluorinated polyelectrolytes.

34. - 35. (Canceled)

36. (Previously Presented) The polyelectrolyte film of claim 1 forming an intermediate layer between an electrically conductive contact and a thin film of medium, said medium emitting light on passage of an electrical current.

37. (Previously Presented) The polyelectrolyte film of claim 1 forming an intermediate layer between an electrically conductive contact and a light emitting medium, said contact injecting electrons into said medium.

38. (Previously Presented) The polyelectrolyte film of claim 1 forming an intermediate layer between an electrically conductive contact and a light emitting medium, said medium comprising a conjugated polymer.

39. (Previously Presented) The polyelectrolyte film of claim 1 having a thickness of less than 1 micrometer.

40. - 41. (Canceled)

42. (New) The film of claim 12 wherein the polyelectrolyte polymer comprises a plurality of charged repeat units with at least two fluorine atoms.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina Krylova whose telephone number is (571)270-7349. The examiner can normally be reached on Monday-Friday 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Irina Krylova/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796